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wafers; and

a wafer handler located within the wafer handling chamber for transporting semiconductor wafers between each of the plurality of facets.

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61. (Amended Once) A semiconductor manufacturing system as recited in claim 60 wherein the inspection tool is a modular optical inspection system that comprises:

a plurality of modular inspection subsystems each configured to detect defects on a portion of a semiconductor wafer;

a mechanism for moving at least one of the semiconductor wafer and the plurality of modular inspection subsystems with respect to one another; and

a master processor configured to process data delivered from at least some of the modular inspection subsystems, wherein a first one of the plurality of modular inspection subsystems includes a local processor configured to process data collected by the first modular inspection subsystem.

62. (Amended Once) A semiconductor manufacturing system as recited in claim 59 further comprising:

a second metrology tool, wherein the second metrology tool is an ellipsometer configured to measure the thickness of a layer on the surface of the semiconductor wafer.

63. (Amended Once) A semiconductor manufacturing system as recited in claim 59 wherein at least one of the processing tools is a type of tool selected from the group consisting of a CVD reactor, an etcher, and a stripper.

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65. (Amended Once) A method of manufacturing a semiconductor wafer comprising:
providing a wafer handling chamber having a plurality of facets, the wafer handling chamber containing a vacuum environment;

providing a plurality of wafer processing tools, each of the tools being attached to a respective facet on the wafer handling chamber;

providing a metrology tool attached to one of the facets of the wafer handling chamber, wherein the metrology tool measures critical dimensions on pattern-etched semiconductor wafers;

transferring the semiconductor wafer from one of the plurality of wafer processing tools to the metrology tool; and

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measuring the dimension of at least one feature on the semiconductor wafer with the metrology tool.

Please ADD the following new claims:

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67. (Added Claim) A method of manufacturing a semiconductor wafer as recited in claim 65 wherein the metrology tool is an optical detector.

68. (Added Claim) A semiconductor manufacturing system as recited in claim 59 wherein the first metrology tool is an optical detector.

69. (Added Claim) A semiconductor manufacturing system comprising:

a wafer handling chamber having a plurality of facets, the wafer handling chamber containing a vacuum environment;

a plurality of wafer processing tools, each of the wafer processing tools being attached to a respective facet on the wafer handling chamber;

at least two inspection tools, wherein each inspection tool is configured to generate a defect report for an associated wafer processing tool; and
a computer containing a defect database that collects defect reports from each of the inspection tools, whereby statistical process control of each associated wafer processing tool is performed.

70. (Added Claim) A semiconductor manufacturing system as recited in claim 69 wherein there is an inspection tool associated with each of the wafer processing tools.

71. (Added Claim) A semiconductor manufacturing system, comprising:

a wafer handling chamber having a plurality of facets, the wafer handling chamber containing a vacuum environment;

a plurality of wafer processing tools, each of the wafer processing tools being attached to a respective facet on the wafer handling chamber; and

a modular inspection tool attached to one of the facets of the wafer handling chamber, the modular inspection tool including a plurality of inspection sensors and metrology sensors, whereby the metrology sensors measure critical dimensions on pattern-etched semiconductor wafers.

72. (Added Claim) A semiconductor manufacturing system as recited in 71 wherein the inspection sensors and metrology sensors are interleaved.

73. (Added Claim) A method of inspecting semiconductor wafers on a wafer handling chamber, comprising:

providing a wafer handling chamber having a plurality of facets, the wafer handling chamber containing a vacuum environment;

providing a plurality of wafer processing tools, each of the wafer processing tools being attached to a respective facet on the wafer handling chamber;

providing a modular inspection tool for attaching to a facet of the wafer handling chamber wherein the modular inspection tool includes a plurality of interleaved inspection and metrology sensors;

performing a first scan of a semiconductor wafer with the modular inspection tool wherein the inspection sensors are used to inspect the wafer for defects; and

performing a second scan of the semiconductor wafer with the modular inspection tool wherein the metrology sensors are used to measure critical dimensions on the wafer.

74. (Added Claim) A method of inspecting semiconductor wafers on a wafer handling chamber as recited in claim 73, further comprising:

transferring the semiconductor wafer from one of the plurality of wafer processing tools to the modular inspection tool.

REMARKS

In the Office Action, claims 59-66 have been rejected under 35 U.S.C. §102(e) or, in the alternative, under 35 U.S.C. §103(a) as being unpatentable over Sato et al. (U.S. Patent No. 5,766,360).

Claims 59, 61-63, and 65 have been amended to more clearly describe the claimed invention. New claims 67-74 have been added. Therefore, claims 59-74 are now pending.

Independent claims 59 and 65, as amended, pertain to systems where a semiconductor manufacturing system includes among other things a wafer handling chamber, wherein a metrology tool for measuring "critical dimensions" on pattern-etched semiconductor wafers is